

Neles Easyflow™ J4 series 3-piece ball valve DN15 - DN50 (1/2" - 2")

Installation, maintenance and
operating instructions



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READ THESE INSTRUCTIONS FIRST!

These instructions provide information about safe handling and operation of the valve.

If you require additional assistance, please contact the manufacturer or manufacturer's representative.

SAVE THESE INSTRUCTIONS!

Addresses and phone numbers are printed on the back cover.

1. GENERAL

1.1 SCOPE OF THE MANUAL

This instruction manual contains important information regarding the installation, operation and maintenance of Neles Easyflow™ J4 Series full or reduced bore 3-piece seat supported ball valves. Please read these instructions carefully and save them for future reference.

WARNING:

THE USE OF THE VALVE IS APPLICATION SPECIFIC. BE SURE THAT THE VALVE IS SUITABLE FOR ITS INTENDED SERVICE. IF YOU HAVE ANY QUESTIONS CONCERNING THE USE, APPLICATION OR COMPATIBILITY OF THE VALVE WITH THE INTENDED SERVICE, CONTACT NELES FOR MORE INFORMATION.

1.2 VALVE MARKINGS

The valve has a name plate attached to the valve body or tied to the valve (for valves without flanges). The name plate markings identify the size, materials of construction, pressure rating, month and year of construction, and a unique manufacturing order number.

1.3 SAFETY PRECAUTIONS

WARNING:

DO NOT EXCEED THE VALVE PERFORMANCE LIMITATIONS!

EXCEEDING THE PRESSURE OR TEMPERATURE LIMITATIONS MARKED ON THE VALVE LABEL PLATE MAY CAUSE DAMAGE AND LEAD TO UNCONTROLLED PRESSURE RELEASE. DAMAGE OR PERSONAL INJURY MAY RESULT.

WARNING:

SEAT AND BODY RATINGS!

THE PRACTICAL AND SAFE USE OF THIS PRODUCT IS DETERMINED BY BOTH THE SEAT AND BODY RATINGS. READ THE NAME PLATE AND CHECK BOTH RATINGS. SOME SEAT MATERIALS HAVE PRESSURE RATINGS THAT ARE LESS THAN THE BODY RATING. ALL OF THE BODY AND SEAT RATINGS ARE DEPENDENT ON VALVE TYPE AND SEAT MATERIAL. DO NOT EXCEED THESE RATINGS!

WARNING:

BEWARE OF BALL MOVEMENT!

KEEP HANDS, OTHER PARTS OF THE BODY, TOOLS AND OTHER OBJECTS OUT OF THE OPEN FLOW PORT. LEAVE NO FOREIGN OBJECTS INSIDE THE PIPELINE. WHEN THE VALVE IS ACTUATED, THE BALL FUNCTIONS AS A CUTTING DEVICE. DISCONNECT ANY PNEUMATIC SUPPLY LINES, ANY ELECTRICAL POWER SOURCES AND MAKE SURE SPRINGS IN SPRING-RETURN ACTUATORS ARE IN THE FULL EXTENDED/RELAXED STATE BEFORE PERFORMING ANY VALVE MAINTENANCE. FAILURE TO DO THIS MAY RESULT IN DAMAGE OR PERSONAL INJURY!

WARNING:

WHEN HANDLING THE VALVE OR VALVE/ACTUATOR ASSEMBLY, TAKE ITS WEIGHT INTO ACCOUNT!

NEVER LIFT THE VALVE OR VALVE/ACTUATOR ASSEMBLY BY THE ACTUATOR, POSITIONER, LIMIT SWITCH OR THEIR PIPING /BRACKETS. PLACE LIFTING DEVICES SECURELY AROUND THE VALVE BODY. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN DAMAGE OR PERSONAL INJURY FROM FALLING PARTS (SEE **FIGURE 1**).

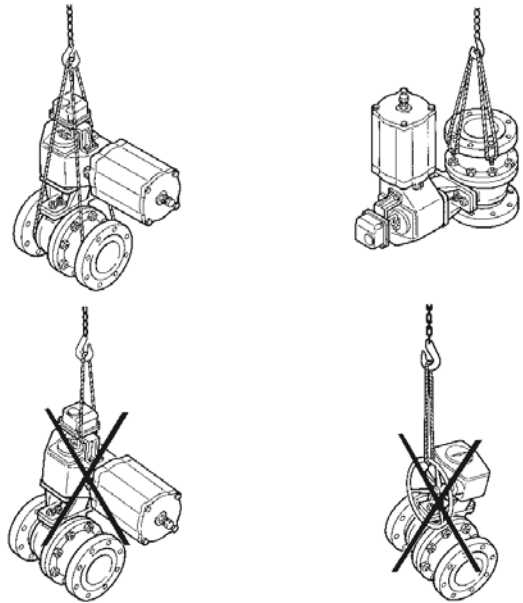


Figure 1. Lifting of the valve assembly

2. TRANSPORTATION AND STORAGE

Check the valve and the accompanying devices for any damage that may have occurred during transport.

Store the valve carefully. Store indoors in a cool, dry place.

Do not remove the flow port protectors until installing the valve.

Move the valve to its intended location just before installation.

If the valve(s) are to be stored for a long duration, follow the recommendations of IMO-S1.

3. INSTALLATION

3.1 GENERAL

Remove the flow port protectors and check that the valve is clean inside. Clean valve if necessary.

Flush the pipeline carefully before installing the valve. Foreign objects, such as sand or pieces of welding electrodes, will damage the ball and seats.

3.2 INSTALLING IN THE PIPELINE

WARNING:

DO NOT ATTEMPT TO CORRECT PIPELINE MISALIGNMENT WITH THE VALVE!

The valve may be installed in any position and offers tight shut-off in either flow direction. When in a horizontal line, it is not recommended to install a valve with the stem on the underneath side as debris in the pipeline may enter the body cavity and damage the gland packing.

Refer to Section 4, **MAINTENANCE** for stem seal adjustment. If there is seepage past the stem seal upon installation, it means the valve may have been subject to wide temperature variations in shipment. Leak-tight performance will be restored by a simple stem seal adjustment described in the **MAINTENANCE** section.

SCREWED END INSTALLATION

WARNING:

DO NOT USE HANDLE TO TIGHTEN VALVE ONTO THE PIPE. THE VALVE SHALL BE TIGHTENED ONTO THE PIPE WITH A WRENCH ON THE END CAP NEAREST THE PIPE. PIPE THREADS REQUIRE USE OF THREAD COMPOUND TO SEAL. USE THREAD COMPOUND THAT IS COMPATIBLE WITH THE APPLICATION, AND IN COMPLIANCE WITH APPLICABLE PIPING CODES AND STANDARDS. PLEASE CHECK THE TYPE OF VALVE THREAD END BEFORE APPLYING TORQUE (METRIC OR BSPT OR NPT).

Use standard piping practices to install valves with threaded end connections.

WELD END INSTALLATION

WARNING:

WELDING AND/OR GRINDING STAINLESS STEEL AND OTHER ALLOYS CONTAINING CHROMIUM METAL MAY CAUSE THE RELEASE OF HEXAVALENT CHROMIUM. HEXAVALENT CHROMIUM(VI) OR CR(VI), IS KNOWN TO CAUSE CANCER. BE SURE TO USE ALL APPROPRIATE PPE WHEN WELDING METALS CONTAINING CHROMIUM.

NOTE: A qualified welder must do the installation welding. The welder and welding procedure should be qualified in accordance with the ASME Boiler and Pressure Vessel Code Section IX or other applicable regulation.

CAUTION: To prevent damage to the seat and seals, do not allow the temperature of the seat and body seal area to exceed 94 °C (200 °F). It is recommended that thermal chinks be used to check the temperature in these areas during welding.

CAUTION: Ensure that any weld splatter does not fall onto the ball or seats. This may damage critical sealing surfaces and cause leaks.

The valve does not need to be disassembled before welding to the pipe. If the valve is disassembled, the body seals should be replaced.

Cycle the valve to the fully open position before welding.

Remove or protect the handle or actuator from weld splatter or arc strikes.

Before final welding, ensure a gap exists between the valve and end of the pipe in accordance with ASME welding standards. Tack weld the valve to the pipe in several locations and check for proper alignment with the pipe.

Weld by applying a 3 mm (1/8 inch) maximum weld bead per pass around each end. Use a temperature chalk and a wet cloth wrapped around the center section to prevent overheating.

For welds that require multiple passes to achieve final weld size, stop after each pass and carefully monitor the valve body temperature.

After welding, flush the pipeline with the valve in the fully open position to remove any weld splatter. Perform a visual inspection of the welds before next operation. Operate the valve 3 to 4 times to ensure proper operation of the valve.

3.3 VALVE INSULATION

Neles Easyflow ball valves do not require insulation. If desired, the valve may be insulated; however, the insulation must not continue above the upper level of the valve. See **Figure 2**.

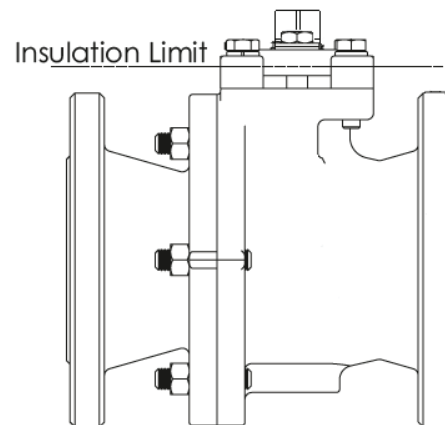


Figure 2. Insulation of the valve

3.4 ACTUATOR

WARNING:

WHEN INSTALLING THE ACTUATOR ON THE VALVE, MAKE SURE THAT THE VALVE ASSEMBLY FUNCTIONS PROPERLY. INFORMATION ON ACTUATOR INSTALLATION IS GIVEN IN SECTION 7 OR IN THE SEPARATE ACTUATOR INSTRUCTIONS.

The actuator should be installed in a manner that allows plenty of room for its removal.

The actuator must not touch the pipeline, tanks, walls, or other equipment because vibration may interfere with its operation. Please ensure the stored energy in the actuator is released before installing the actuator up on the valve.

3.5 COMMISSIONING

Ensure that there is no dirt or foreign objects left inside the valve or pipeline. Flush the pipeline carefully. Make sure that the valve is fully open when flushing.

Ensure that all nuts, fittings, and cables are properly fastened.

If so equipped, check that the actuator positioner and/ or switch(s) are correctly adjusted. Actuator adjustment is in Section 5. To adjust any accompanying device(s) refer to the separate control equipment instruction manuals.

4. MAINTENANCE

4.1 GENERAL

Although Neles Easyflow valves are designed to work under severe conditions, proper preventative maintenance can significantly help to prevent unplanned downtime and reduce the total cost of ownership. Neles recommends inspecting valves at least every five (5) years. The inspection and maintenance frequency depend on the actual application and process condition. Routine maintenance consists of tightening the gland flange bolts (item 16 in **exploded view**) periodically to compensate for stem seal wear.

Always loosen and tighten fasteners with the appropriate wrench to avoid damaging the valve, handle, linkage, actuator, fittings or flats.

Overhaul maintenance consists of replacing seats and seals. These parts may be obtained from Neles or an Authorized Neles Distributor.

WARNING:

FOR YOUR SAFETY, IT IS IMPORTANT THE FOLLOWING PRECAUTIONS BE TAKEN PRIOR TO REMOVAL OF THE VALVE FROM THE PIPELINE OR BEFORE ANY DISASSEMBLY:

1. BE SURE YOU KNOW WHAT FLUID IS IN THE PIPELINE. IF THERE IS ANY DOUBT, DOUBLE-CHECK WITH THE PROPER SUPERVISOR OR REFER RELEVANT APPROVED DOCUMENTS.
2. WEAR ANY PERSONAL PROTECTIVE EQUIPMENT (PROTECTIVE CLOTHING OR EQUIPMENT) REQUIRED WHEN WORKING WITH THE FLUID IS INVOLVED.
3. DEPRESSURIZE THE PIPELINE AND CYCLE THE VALVE AS FOLLOWS:
 - A. PLACE THE VALVE IN THE OPEN POSITION AND DRAIN THE PIPELINE.
 - B. CYCLE THE VALVE TO RELIEVE RESIDUAL PRESSURE IN THE BODY CAVITY BEFORE REMOVAL FROM THE PIPELINE
 - C. AFTER REMOVAL AND BEFORE DISASSEMBLY, CYCLE THE VALVE AGAIN SEVERAL TIMES.

4.2 ACTUATED VALVE

It is generally most convenient to detach the actuator and its auxiliary devices before removing the valve from the pipeline. If the valve package is small or if it is difficult to access, it may be more practical to remove the entire assembly.

NOTE: To ensure proper reassembly, observe the position of the actuator and positioner/limit switch with respect to the valve before detaching the actuator.

WARNING:

ALWAYS DISCONNECT THE ACTUATOR FROM ITS POWER SOURCE, PNEUMATIC, HYDRAULIC OR ELECTRICAL, BEFORE ATTEMPTING TO REMOVE IT FROM THE VALVE!

WARNING:

DO NOT REMOVE A SPRING-RETURN ACTUATOR UNLESS A STOP-SCREW IS CARRYING THE SPRING FORCE!

1. Detach the air supply, electrical supply, hydraulic supply and control signal cables or pipes from their connectors.
2. Remove the actuator mounting bracket screws.
3. Lift the actuator straight up in line with the valve stem until the connection between actuator drive and valve stem is completely disengaged.
4. Place actuator in a safe location to avoid damage or personal injury.

4.3 VALVE DISASSEMBLY

NOTE: It is good practice to replace all seats and seals any time a valve is disassembled.

NOTE: Always use original OEM parts to make sure that the valve functions properly.

Numbers in () refer to items shown in the exploded view

1. Follow the steps in all the **WARNING** sections above before performing any work on the valve.
2. Open the valve.
3. Place the valve on a bench or other suitable working space.
4. Secure tank side flange to working surface to prevent movement during disassembly.
5. Remove body nuts (20).
6. Lift end pieces (2), body gaskets (18), seat retainers (17), and seats (4) from both ends of valve.
7. Close ball (3) by rotating stem (5) and lift ball (3) from body.
8. Remove gland nuts (16), gland flange (14), disc spring (13), stem retainer 2 (10), v-ring stem seal (9), stem retainer 1 (8), and stem seal (7). Use caution to prevent denting or scratching the sealing surface inside the packing bore.
9. Push stem (5) into valve body and carefully remove. Avoid denting or scratching the sealing surface on the stem.
10. Remove bottom stem washer (6) from the body.

4.4 CHECKING PARTS

1. Clean all disassembled parts.
2. Check the stem (5) and ball (3) for damage. Pay particular attention to the sealing areas.
3. Check all sealing and gasket surfaces on the body (1) and end piece (2).
4. Replace any damaged parts.
5. Replace any fastener where the threads are damaged or have been heated, stretched or corroded.
6. Replace any parts that have cracks, gouges or pits that will affect sealing.

NOTE: When ordering spare parts, always include the following information:

- a. Valve type code as per technical bulletin and model number from name plate,
- b. If the valve is serialized – the serial number (stamped on the valve body or name plate) or applicable manufacturing order number,
- c. Spare part set number as per **Table 3**.

4.5 VALVE ASSEMBLY

Numbers in () refer to items shown in the **Exploded view**.

It is advisable to replace seats and seals if complete disassembly and reassembly become necessary.

1. Clean all valve components, if not previously done.
2. Inspect all components for damage before assembling the valve. Look for damage to the sealing areas on the ball, stem, and body.
3. With a brush, clean body studs (19) and gland stud (15) of foreign material such as paint, thread locker, grime and commodity. Inspect the threads for damage or defect with appropriate ring or plug gage. Repair any out-of-tolerance threads or replace in-kind.
4. Re-inspect all components for damage to the sealing areas, stem (5), body (1), and end piece (2). Replace any damaged parts.
5. Carefully clean and polish the ball (3) sealing surface: It should be free of all scratches and grooves.
6. If the ball is slightly damaged, it may be possible to smooth the sealing surface with crocus cloth or equivalent. If deep scratches are present, replace the ball.
7. Place stem washer (6) over stem (5) and gently press into place against shoulder on stem (5).
8. Insert the stem (5) into the body (1), being careful not to scratch the stem sealing surface; and press it gently up into the stem bore until resistance is felt from the stem washer (6).
9. Holding stem (5) in place from the bottom, insert stem seal (7), stem retainer 1 (8), v-ring stem seal (9), and stem retainer 2 (10) with both inner and outer o-rings (11) and (12).
10. Install disc springs (13) (see **Figure 3** for proper orientation), gland flange (14), and gland flange nuts (16).
11. Tighten gland nuts (16) evenly until stem seal (9) is compressed and then tighten an additional 1/4 turn. Visually inspect to ensure gland flange (14) is parallel with top of actuator mounting flange.

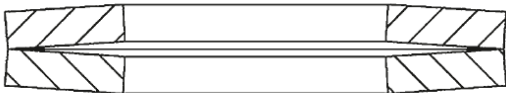


Figure 3. Proper Disc Spring Arrangement (uncompressed)

12. Rotate the stem (5) so the ball drive is in the closed position. Place the ball (3) into the body cavity by partially rotating and sliding the ball onto the stem (5). Make certain the stem is roughly in the middle of the ball slot.
13. Place the seats (4) and seat retainers (17) into the body (1) in the correct orientation so the proper surface contacts the ball.
14. Install the body gaskets (18) onto the end pieces (2).
15. Carefully place the end pieces (2) against the body (1) and loosely install the body studs (19) and nuts (20). Lightly lubricate stud threads and face of nut with anti-seize grease.

Tighten the body nuts in an alternating sequence across the body, gradually increasing the tightening torque in multiple steps to applicable torque from **Table 1**.

| Table 1 | | |
|---------------------------------|-----------------------|---------------------------|
| Body Nut Tightening Torque, N.m | | |
| Stud size | Carbon steel Grade B7 | Stainless steel Grade B8M |
| 1/4 - 20 UNC | 15 | 12 |
| 5/16 - 18 UNC | 30 | 25 |
| 3/8 - 16 UNC | 50 | 40 |
| 7/16 - 14 UNC | 75 | 65 |
| 1/2 - 13 UNC | 120 | 100 |
| 9/16 - 12 UNC | 160 | 150 |
| 5/8 - 11 UNC | 230 | 200 |
| 3/4 - 10 UNC | 400 | 370 |
| 7/8 - 9 UNC | 650 | 500 |

16. After fully tightening the stem seal and body joint flange, operate valve to verify smooth operation during opening and closing.
17. If the actuator was removed, reinstall and set the actuator stops as described in the **ACTUATOR MOUNTING INSTRUCTIONS** Section.

4.6 TESTING THE VALVE

WARNING:

WHEN PRESSURE TESTING, EXERCISE CAUTION AND MAKE SURE ALL EQUIPMENT USED IS IN GOOD WORKING CONDITION AND APPROPRIATE FOR THE INTENDED PRESSURE.

If the valve is to be tested prior to returning to service, make sure the test pressures are in accordance with an applicable standard.

When testing the valve for external tightness, keep the ball in the half open position.

If testing for seat tightness, please contact Neles for advice.

WARNING:

WHEN PERFORMING ANY TESTS, NEVER EXCEED THE MAXIMUM OPERATING PRESSURE OR MAXIMUM SHUT-OFF PRESSURE LISTED ON THE NAME PLATE.

5. ACTUATOR

WARNING:

BEFORE INSTALLING THE VALVE AND ACTUATOR, BE SURE THAT THE INDICATOR POINTER ON TOP OF THE ACTUATOR IS CORRECTLY INDICATING THE VALVE POSITION. FAILURE TO ASSEMBLE THESE PRODUCTS TO INDICATE CORRECT VALVE POSITION COULD RESULT IN DAMAGE OR PERSONAL INJURY.

CAUTION:

When installing or servicing a valve/ actuator assembly, the best practice is to remove the entire assembly from service.

CAUTION:

An actuator should be remounted on the valve from which it was removed. The actuator must be checked and readjusted for proper open and close position each time it is remounted.

WARNING:

THE VALVE BODY AND MOUNTING INTERFACE HAS BEEN DESIGNED TO SUPPORT THE WEIGHT AND OPERATION OF NELES ACTUATORS AND RECOMMENDED ACCESSORIES. USE OF THIS INTERFACE TO SUPPORT ADDITIONAL EQUIPMENT SUCH AS PEOPLE, LADDERS, ETC. MAY RESULT IN THE FAILURE OF THE VALVE OR ACTUATOR AND MAY CAUSE PERSONAL INJURY.

WARNING:**BEWARE OF BALL MOVEMENT!**

KEEP HANDS, OTHER PARTS OF THE BODY, TOOLS AND OTHER OBJECTS OUT OF THE OPEN FLOW PORT. LEAVE NO FOREIGN OBJECTS INSIDE THE VALVE OR PIPELINE. WHEN THE VALVE IS OPERATED, THE BALL FUNCTIONS AS A CUTTING DEVICE.

5.1 ACTUATOR MOUNTING INSTRUCTIONS

- When a spring-return actuator is being mounted, the valve should be in the closed position for spring-to-close operation or in the open position for the spring-to-open operation. When an electric or double-acting pneumatic actuator is being mounted, the valve position should correspond to the indicated actuator position.
- Assemble actuator onto the valve, ensuring full engagement between the stem and actuator drive, and the actuator fully contacts the mounting face on the valve.
- Tighten actuator mounting screws to the torque listed in **Table** below.

CAUTION:

Do not exceed the tightening torque. Applying excessive tightening torque can damage the threads in the actuator body.

| TABLE 2 | |
|----------------------------|--------------------------|
| Torque to Actuator bolting | |
| Bolt Size | No Lubrication to Screws |
| mm | N.m |
| M6 | 6.8 |
| M8 | 15 |
| M10 | 30 |
| M12 | 52 |
| M16 | 122 |
| M20 | 230 |

- Cycle actuator and verify proper ball position in both open and closed positions. Adjust the actuator travel stops as necessary.

6. SERVICE / SPARE PART

We recommend that valves be directed to Neles service centers for maintenance. The service centers are equipped to provide rapid turn-around at a reasonable cost and offer warranty for reconditioning based on condition of each valve.

NOTE: When sending goods to the service center for repair, do not disassemble them. Clean the valve carefully and flush the valve internals. Include the material safety datasheet(s) (MSDS) for all media flowing through the valve. Valves sent to the service center without MSDS datasheet(s) will not be accepted.

For further information on spare parts and service or assistance visit our web-site at www.neles.com/products.

NOTE: When ordering spare parts, always include the following information:

- Valve type code as per technical bulletin and model number from name plate,
- If the valve is serialized – the serial number (stamped on the valve body or name plate) or applicable manufacturing order number,
- Spare part set number as per **Table 3**.

| *Sign.1 | Sign.2 | Sign.3 | *Sign.4 | #Sign.5 | Spare part sets |
|------------|---------------------|--|----------------------------|---------------------|-----------------|
| Valve size | Series | Seat and seal materials | O-Ring material | Flow bore | Type codes |
| 15 | J4 | ZG (TFM™ 1600 / Graphite) | (Fluoroelastomer - FKM) | NA | 15 J4ZG53 |
| 20 | | | | NA | 20 J4ZG53 |
| 25 | | | | NA | 25 J4ZG53 |
| 32 | | | | NA | 32 J4ZG53 |
| 40 | | | | A = Reduced bore | 40 J4ZG53 A |
| 50 | B = Full bore | 40 J4ZG53 B | | | |
| | A = Reduced bore | 50 J4ZG53 A | | | |
| | B = Full bore | 50 J4ZG53 B | | | |

* leave space after Sign.1 and Sign.4

NA – Not applicable (both full bore and reduced bore have same spare part set).

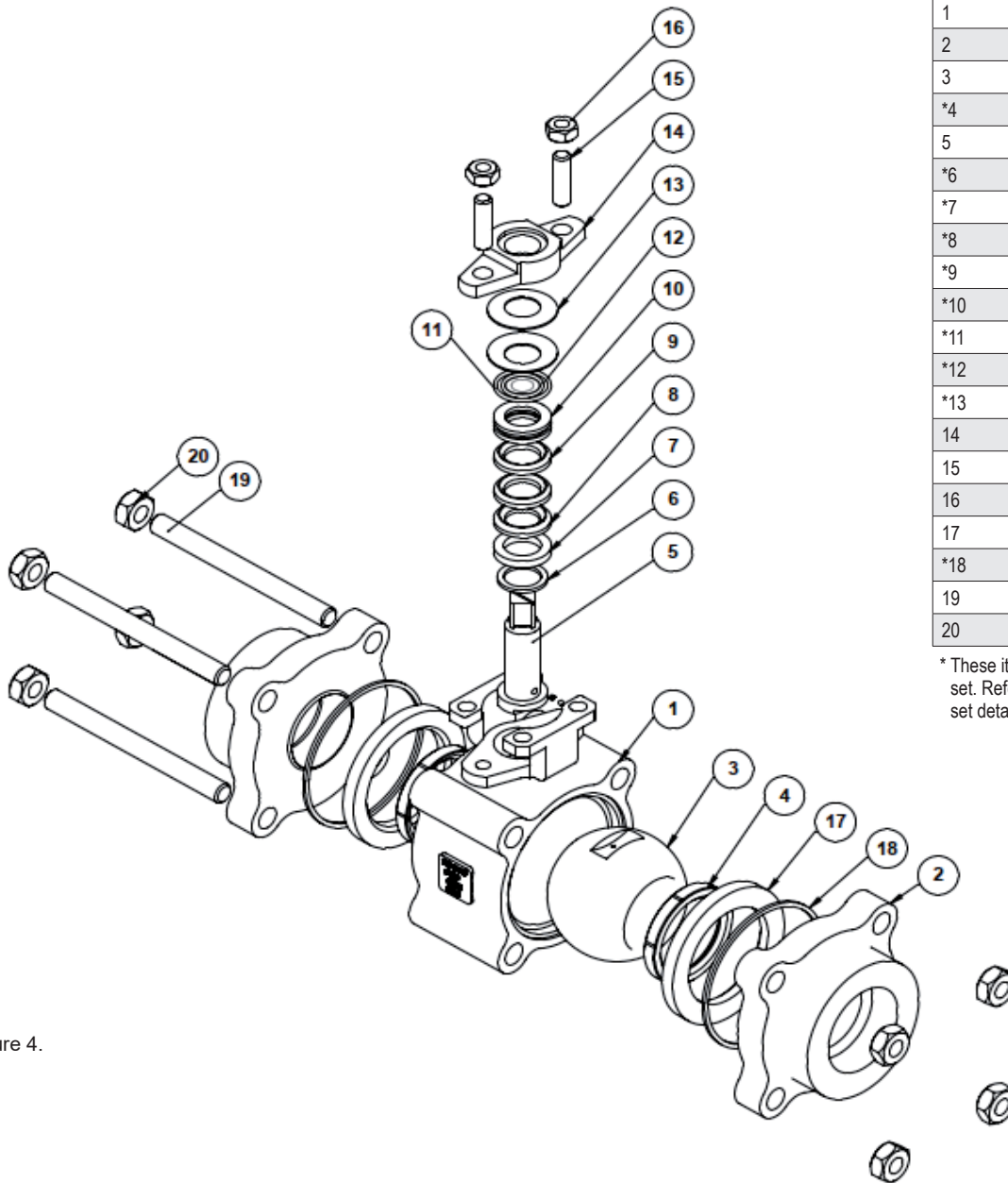
Sign.5 suffix A and B applicable for DN 40 and DN 50 valve sizes e.g. 25 J4ZG53, 40 J4ZG53 B, etc.

7. WELDING WARNING

WARNING:

WELDING AND/OR GRINDING OF STAINLESS STEEL AND OTHER ALLOY STEELS CONTAINING CHROMIUM METAL MAY CAUSE THE RELEASE HEXAVALENT CHROMIUM. HEXAVALENT CHROMIUM, CHROMIUM(VI) OR CR(VI), IS KNOWN TO CAUSE CANCER. BE SURE TO USE ALL APPROPRIATE PPE WHEN WELDING METALS CONTAINING CHROMIUM. IF YOU HAVE ANY QUESTIONS CONSULT YOUR SUPERVISOR.

7. EXPLODED VIEW DN15 TO DN50



| PART LIST | |
|-----------|-------------------|
| Part no. | Part name |
| 1 | Body |
| 2 | End piece |
| 3 | Ball |
| *4 | Seat |
| 5 | Stem |
| *6 | Stem washer |
| *7 | Stem seal |
| *8 | Stem retainer 1 |
| *9 | V-ring stem seal |
| *10 | Stem retainer 2 |
| *11 | Outer stem O-ring |
| *12 | Inner stem O-ring |
| *13 | Disc spring |
| 14 | Gland flange |
| 15 | Gland stud |
| 16 | Gland nut |
| 17 | Seat retainer |
| *18 | Body gasket |
| 19 | Body stud |
| 20 | Body nut |

* These items form the spare part set. Refer **Table 3** for spare part set details for each valve.

Figure 4.

8. TYPE CODE

NELES EASYFLOW J4 3-PIECE SEAT SUPPORTED BALL VALVE

| 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. |
|----|----|----|----|----|----|----|----|----|-----|
| 50 | J4 | B | N | 22 | 36 | 36 | ZG | 53 | |

| 1. | Size, DN (NPS ref.) |
|----|---------------------|
| 15 | 15 (1/2) |
| 20 | 20 (3/4) |
| 25 | 25 (1) |
| 32 | 32 (1 1/4) |
| 40 | 40 (1 1/2) |
| 50 | 50 (2) |

| 2. | Series |
|----|--------|
| J4 | |

| 3. | Flow bore |
|----|--------------|
| A | Reduced bore |
| B | Full bore |

| 4. | End connection |
|----|--|
| N | NPT |
| B | BSP |
| S | Socket weld end |
| T | Butt weld end Sch. 40 or 40S as applicable |

| 5. | Body material |
|----|-------------------------|
| 22 | Carbon steel (WCB) |
| 36 | Stainless steel (CF8M)* |

* End pieces are dual certified with CF3M for weld end valves

| 6. | Ball material |
|----|---------------------|
| 36 | 316 Stainless steel |

| 7. | Stem material |
|----|------------------------|
| 36 | 316 Stainless steel |
| 43 | 17-4PH Stainless steel |

| 8. | Seat and seal materials |
|----|-------------------------|
| ZG | TFM™ 1600 / Graphite |
| VG | Devlon® / Graphite |

| 9. | O-Ring material |
|----|-----------------------|
| 53 | Fluoroelastomer (FKM) |

| 10. | Options |
|-----|------------------------|
| | Blank, standard option |
| Q | Cavity filler seat |

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NOTE:

As the use of the valve is application specific, a number of factors should be taken into account when selecting a valve for a given application.

Therefore, some of the applications in which the valves are used are outside the scope of this document.

If you have any questions concerning the use, application or compatibility of the valve with the intended service, contact nearest Neles sales office for more information.

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